Claims

1. Method of manufacturing pistons and components thereof, piston heads for example, especially intended for internal-combustion engines, wherein in an initial manufacturing step (A) a blank (1) that will eventually constitute the piston or piston component is preliminarily forged along a prescribed axis (1'), shaping appropriate contours (2, 3, 4, 5, 6), and wherein in at least one subsequent manufacturing step (B) the preliminarily shaped piston (7) is finally forged along at least one other axis (1") , creating additional contours (6).

2. Method as in Claim 1, characterized in that the initial manufacturing step (A) comprises preliminarily shaping the blank (1) along an axis (1') that constitutes its longitudinal axis.

3. Method as in Claim 1 or 2, characterized in that in the initial manufacturing step (A) a rod-like and optionally cylindrical blank (1) is upset and provided with a skirt (22) and a cavity (2), whereby contours (3-6) are shaped onto the skirt (22) along its longitudinal axis (1') in the vicinities of its inner and outer circumferences (3) and of its upper and lower faces (4).

4. Method as in one of Claims 1 through 3, characterized in that in the subsequent manufacturing step (B) further contours (6) are shaped onto the preliminarily shaped piston (7) along another axis (1") by forging at approximately 90° to the first axis (1'), especially the longitudinal axis.

5. Method as in one of Claims 1 through 4, characterized in that initial manufacturing step (A) along the first axis and the subsequent manufacturing step (B) along the second axis are carried out in the same forging tool (10), into which the blank (1) can be optionally heated before it is inserted.

6. Method as in one of Claims 1 through 5, characterized in that during the subsequent manufacturing step (B) the wall thickness of the preliminarily shaped piston (7) can be decreased, accompanied by the creation of reinforcements (23).

7. Method as in one of Claims 1 through 6, characterized in that during one of the manufacturing steps (A & B) an integrated skirt (22) can be shaped onto the preliminarily shaped piston (7) such that the skirt will be accommodated within the skirt's [sic] circumference (21) during the subsequent manufacturing step (B).

8. Method as in one of Claims 1 through 7, characterized in that a steel blank (1) is employed.

9. Method as in one of Claims 1 through 8, characterized in that the piston (7) can optionally be reformed within another plane in still another manufacturing step.

10. Method as in one of Claims 1 through 9, characterized in that, especially in the manufacture of piston heads (7), excess material (8) is removed and/or recesses (9) created, especially by punching, during at least one of the manufacturing steps (A & B).

11. Forging tool with in the vicinity of an upper die half (11) and of a lower die half (12) several parts (13, 14, 15, 16, & 17) that can be displaced toward a blank (1) over planes defined by axes (1' & 1"), preliminarily and finally shaping a piston or a component thereof, a piston head for example, whereby the parts in at least one of the die halves (11 or 12) can be employed for the preliminary forging and the parts (16) in at least one lower die half (12) can be employed for the final forging.

12. Forging tool as in Claim 11, characterized in that the parts (13-15) in the upper die half (11) can be employed

for the preliminary forging and the parts (16 & 17) in the lower die half (12) can be employed for the final forging.

13. Forging tool as in one of Claims 11 and 12, characterized in that the parts (16 & 17) in the lower die half (12) can be rotated into a position approximately 90 ° to the direction traveled by the parts (13-15) in the upper die half (11).

14. Forging tool as in one of Claims 11 through 13, characterized in that the parts (16) in the lower die half (12) can be rotated especially by hydraulic piston-and-cylinder mechanisms (18) into a position at an angle to the parts (13-15) in the upper die half (11).

15. Forging tool as in one of Claims 11 through 14, characterized in that individual parts (13 & 16) in the upper die half (11) and in the lower die half (12) can slide over surfaces the extend over various planes in the vicinity of the lower die half (12).